We claim:

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1. A radio transmitter comprising:

a frequency shift keying (FSK) coding logic circuit;

a first digital-to-analog converter (DAC) coupled to a first output of the coding logic circuit and a second DAC coupled to a second output of the coding logic circuit;

a first filter coupled to the first DAC and a second filter coupled to the second DAC;

a first mixer coupled to the first filter and a second mixer coupled to the second filter; and

a summing device that combines an output of the first mixer and an output of the second mixer, providing a modulated output signal;

wherein the coding logic circuit is operable to receive digital input data at a rate determined by an operating signal frequency;

wherein the coding logic circuit is further operable to generate a digitally encoded first periodic signal based on the digital data input and to provide the digitally encoded first signal to the first DAC;

wherein the coding logic circuit is further operable to generate a digitally encoded second periodic signal and to provide the digitally encoded second signal to the second DAC when amplitude of the digital input data corresponds to a first level;

wherein the coding logic is further operable to generate a digitally encoded third periodic signal and to provide the digitally encoded third signal to the second DAC when amplitude of the digital input data corresponds to a second level;

wherein the first mixer is operable to receive a fourth signal substantially shaped like the second signal, and to multiply the fourth signal with data signal received by the first mixer from the first filter;

wherein the second mixer is operable to receive a fifth signal substantially shaped like the first signal, and to multiply the fifth signal with data signal received by the second mixer from the second filter:

wherein the first signal is substantially equal to the second signal shifted by a determined phase angle; and

wherein each DAC is configured to generate a non-linear output.

- 5 2. The radio transmitter of claim 1, further comprising:
 - a phase-locked loop (PLL);
 - a voltage-controlled oscillator (VCO) coupled to the PLL; and
 - a crystal element coupled to the PLL;
 - wherein the VCO is operable to generate the fourth signal and the fifth signal.

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- 3. The radio transmitter of claim 1, wherein the third signal is substantially equal to the negative of the second signal.
- 4. The radio transmitter of claim 1, wherein the second signal is substantially shaped like a sine wave.
 - 5. The radio transmitter of claim 1;
 wherein the digitally encoded first signal is Gray-coded;
 wherein the digitally encoded second signal is Gray-coded; and
 wherein the digitally encoded third signal is Gray-coded.
 - 6. The radio transmitter of claim 5;

wherein each output level produced by the first DAC is obtained from a first set of current sources, and each output level produced by the second DAC is obtained from a second set of current sources; and

wherein the output levels for each respective DAC are Gray-coded.

7. The radio transmitter of claim 1, wherein each output level produced by the first DAC is obtained from a first set of current sources, and each output level produced by the second DAC is obtained from a second set of current sources.

- 8. The radio transmitter of claim 1, further comprising:
 a power amplifier configured to receive the modulated output signal; and
 a loop antenna coupled to the power amplifier;
- wherein the power amplifier is operable to amplify the modulated output signal;

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wherein the loop antenna is operable to transmit the amplified modulated output signal.

9. A method for FSK modulation and data transmission, the method comprising: receiving a digital data input;

generating a digitally encoded first periodic signal;

generating a digitally encoded second periodic signal when amplitude of the digital data input corresponds to a first level;

generating a digitally encoded third periodic signal when amplitude of the digital data input corresponds to a second level;

converting the digitally encoded first periodic signal into the first periodic signal and filtering the first periodic signal;

converting the digitally encoded second periodic signal into the second periodic signal and filtering the second periodic signal;

converting the digitally encoded third periodic signal into the third periodic signal and filtering the third periodic signal;

generating a fourth signal and multiplying the filtered first periodic signal with the fourth signal, resulting in a first mixed signal;

generating a fifth signal and multiplying the filtered second periodic signal and the filtered third periodic signal with the fifth signal, resulting in a second mixed signal;

summing the first mixed signal and the second mixed signal, resulting in a modulated output signal;

wherein the fourth signal is substantially shaped like the second periodic signal, and the fifth signal is substantially shaped like the first periodic signal; and

wherein the first periodic signal is substantially equal to the second periodic signal shifted by a determined phase angle.

- 10. The method of claim 9, wherein the third analog periodic signal is substantially equal to the negative of the second analog periodic signal.
- 5 11. The method of claim 9 further comprising amplifying the modulated output signal.
- The method of claim 9;
 wherein said generating the fourth signal is performed by a VCO; and
 wherein said generating the fifth signal is performed by the VCO.
 - 13. The method of claim 9; wherein said converting the digitally encoded first periodic signal is performed by a first DAC; and
- wherein said converting the digitally encoded second periodic signal and said converting the digitally encoded third periodic signal is performed by a second DAC.
- The method of claim 13, wherein each output level produced by the first DAC is obtained from a first set of current sources, and each output level produced by the second
 DAC is obtained from a second set of current sources.
 - 15. The method of claim 9;

wherein said generating a digitally encoded first periodic signal comprises generating a Gray-coded first periodic signal;

wherein said generating a digitally encoded second periodic signal comprises generating a Gray-coded second periodic signal; and

wherein said generating a digitally encoded third periodic signal comprises generating a Gray-coded third periodic signal.

30 16. The method of claim 15;

wherein said converting the digitally encoded first periodic signal is performed by a first DAC; and

wherein said converting the digitally encoded second periodic signal and said converting the digitally encoded third periodic signal is performed by a second DAC.

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17. The method of claim 16;

wherein each output level produced by the first DAC is obtained from a first set of current sources, and each output level produced by the second DAC is obtained from a second set of current sources; and

wherein the output levels for each respective DAC are Gray-coded.

- 18. The method of claim 9, wherein the second signal is substantially shaped like a sine wave.
- 15 19. The method of claim 9, wherein said generating a fourth signal comprises generating a sine wave signal.
 - 20. The method of claim 9, wherein said generating a fifth signal comprises generating a cosine wave signal.